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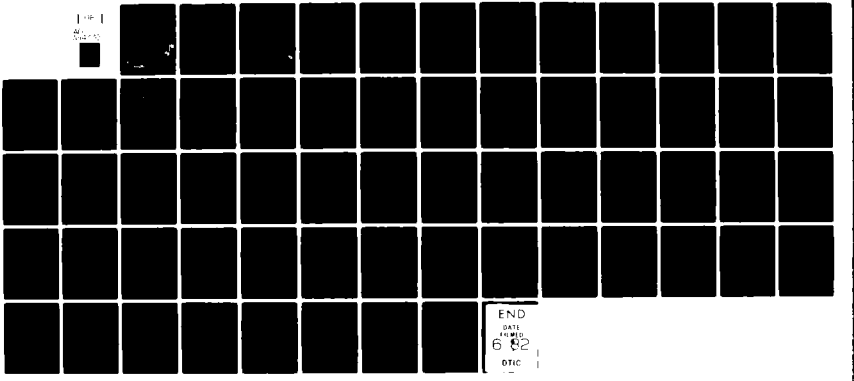

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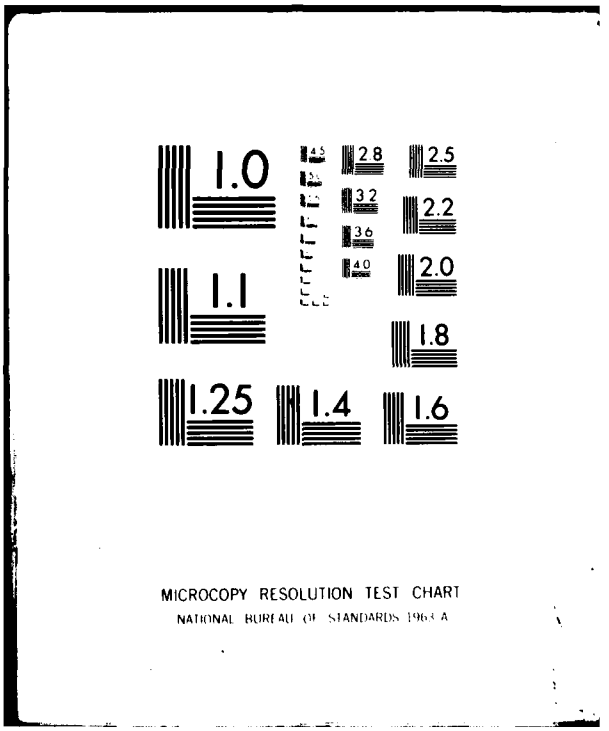
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ODCSPER REPORT NUMBER 73-2-A

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AID LOSS PROBABILITY SYSTEM FOR OFFICERS (AID-O) VOLUME 1 EXECUTIVE SUMMARY

by

Ken R. Powell
Kwan H.Kim
Terry L. Schilling

Prepared for

Department of the Army
Office of the Deputy Chief of Staff for Personnel

by

General Electric Company – TEMPO
777 14th Street, N.W.
Washington, D.C. 20005

under

Contract Number DAHC 15 72 C 0345

September 15, 1974

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ODCSPER REPORT NUMBER 73-2-A

AID LOSS PROBABILITY SYSTEM FOR OFFICERS (AID-O)

VOLUME I

EXECUTIVE SUMMARY

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FOREWORD

The Executive Summary for the AID Loss Probability System - Officers (AID-O) is written to provide senior policy makers with an overview of the model. The overview explains the purpose of the AID-O system, and highlights the assumptions, capabilities and limitations of the model.

Two other reports are included in the companion set of documents which describe this model. Volume II, "Planner/User Manual," is written to provide manpower analysts with an in-depth understanding of the underlying statistical techniques used by the model, as well as detailed operating instructions. Volume III, "Analyst/Programmer Manual," provides computer programmers with the detailed program descriptions required for modification or expansion of the AID-O system.

The AID-O system is a continuation of TEMPO's[1] work in the military manpower and policy evaluation. This model is one of four[2] implemented during Phase II of a two-year contract with the Office of the Assistant Secretary of the Army, Manpower and Reserve Affairs, and the Office of the Deputy Chief of Staff, Personnel.

Development of the AID-O system has been a team effort. Major Marshall Johnson, the Army's primary representative for this project, provided continuing assistance, guidance, and encouragement. Lieutenant Colonel Linwood Lufkin, Lieutenant Colonel Paul Schwartz, Major John House, Mr. Dee Colininger, Mr. Frank Nichols, Mr. Robert Stevens, Mrs. Betty Green, and many others gave generously of their time to provide the in-depth knowledge required to develop the AID-O system. Mrs. Bonnie Dunning provided excellent support to TEMPO with the guidance required to operate the system on MILPERCEN computers. Mr. Terry L. Schilling, Project Manager, Mr. Ken R. Powell and Dr. Kwan H. Kim (a TEMPO consultant) were responsible for the technical development and implementation of the model. Mr. James Clements and Mr. Arthur Baker provided computer programming support and participated in the system testing and installation of the model at MILPERCEN. The Army's technical monitor on this project was Lieutenant Colonel Joseph V. Rafferty.

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(1) Technical and Environmental Management Planning Operation of the General Electric Company, founded in 1956.

(2) For a complete description of the other three models, see the documentation for "AID Loss Probability System - Enlisted (AID-E)," "Central Integrating Model - Enlisted (CIM-E)" and "Central Integrating Model - Officers (CIM-O)."

ABSTRACT

This document describes the purpose and capabilities of the AID Loss Probability System - Officers (AID-O). The model was developed by TEMPO, a component of the General Electric Company, for the Assistant Secretary of the Army, Manpower and Reserve Affairs and the Office of the Deputy Chief of Staff, Personnel.

The AID-O system is capable of generating consistent and reliable loss probabilities for current and future generations of officer projection models. The core of the system is a statistical technique developed at the University of Michigan, known as the Automatic Interaction Detector (AID) routine. This technique groups the actual officer population into subpopulations identified by personnel attributes which are most predictive of individual losses in each subpopulation. A loss probability is developed for each individual who belongs to a specific subpopulation. Any desired loss matrix format then can be generated by summing the probabilities over the appropriate individual attributes and dividing by the number of occurrences in each cell. This flexibility provides the analyst with the capability for creating a variety of loss matrices with consistent loss probabilities.

The AID-O system allows the analyst to identify the loss probabilities associated with various officer subpopulations which will be affected by alternative policy decisions. The historical rates for these subpopulations then can be subjectively adjusted and a new set of loss matrices derived for each policy alternative. Finally, using Central Integrating Model - Officers (CIM-O) or manual modeling methods, the projected impact of the policy alternatives on the officer population can be evaluated.

The AID-O system provides the analyst with a clear identification of the attributes associated with the various levels of loss behavior, as well as reliable means to generate accurate and consistent loss probabilities. The identification of attributes associated with each subpopulation provides a basis for understanding why losses occur. A unique versatility in the evaluation of policy alternatives is provided to the analyst through the effective coupling of his knowledge and expertise with the AID-O system to create loss probabilities for various policy alternatives.

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I. INTRODUCTION

This document is the Executive Summary for the AID Loss Probability System - Officers (AID-O). The AID-O system was designed and developed to provide military manpower planners with reliable and consistent loss probabilities. This new system provides the analyst with a unique capability to rapidly generate loss probabilities for various policy alternatives which are under consideration.

A. THE ARMY MANPOWER PREDICTION SYSTEM

The AID-O system was developed during Phase II of a two-year project which was undertaken by GE-TEMPO for the Office of the Assistant Secretary of the Army (Manpower and Reserve Affairs) and the Office of the Deputy Chief of Staff for Personnel. The purpose of this project, known as the "Army Manpower Prediction System (AMPS)," was to develop new analytical techniques to assist the Army in accurately and reliably projecting the manpower strength and composition several years into the future.

At the conclusion of Phase I of the project, which was initiated in June of 1972, TEMPO submitted a report outlining areas in which new analytical techniques could be employed to significantly improve manpower projections.[1] A major recommendation underlined the need for a system capable of creating accurate, reliable, and consistent loss probabilities; and in addition, recommended the use of a statistical technique, developed at the University of Michigan, known as the Automatic Interaction Detector (AID). As a result of this recommendation, the AID Loss Probability System - Officers was designed and subsequently developed.

Other recommendations in Phase I of this project resulted in the development of three additional computer simulation models during Phase II: the AID Loss Probability System - Enlisted (AID-E), the Central Integrating Model - Officers (CIM-O), and the Central Integrating Model - Enlisted (CIM-E).

B. AID-O DEVELOPMENT OBJECTIVES

The AID Loss Probability System - Officers was developed during the period of January to October 1974 in the final phase of the AMPS Study. The design of the AID-O system was motivated by several objectives.

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(1) For a complete description of Phase I findings and conclusions see Stephen Enke et al, "Army Integrated Manpower Projection System," General Electric - TEMPO, 31 January 1973.

1. Consistent Probabilities

A primary objective of the AID-O system was to provide consistent loss probabilities for all officer force projections. The process of manpower planning and programming in the Army is organized into several directorates and divisions along many functional lines. This decentralization has resulted in the development of a variety of inconsistent manual and automated techniques for computing loss probabilities within each component of the DCSPER, which are then subsequently used for projections. The AID-O system was designed to replace such inconsistent computations with a central loss prediction capability to serve all organizational needs. The system will provide loss probabilities which can differ in form (i.e., BRANCH by AFCS versus BRANCH by GRADE), but are internally compatible with one another. The system was designed to generate loss probabilities in various forms, suitable for different uses, from a basic set of loss probabilities developed through extensive statistical analysis. This basic set of loss probabilities provides the essential underlying consistency needed in loss projection.

2. Accurate Probabilities

The AID-O system has the capability to produce extremely accurate loss probabilities for officer force projections. In developing these probabilities, the AID statistical technique logically breaks the officer force into groups of people who behave alike in terms of losses. As the composition of the force changes over time, so that one group grows and another decreases in size, the AID system has been designed to automatically reflect these changes in the estimated loss probabilities.

The preliminary results of this study show that the AID-O system produces reliable and accurate loss probabilities which vary from actual experience by only a small percentage. With the ability to generate accurate loss probabilities at various levels of detail, the Army will be able to project the future structure and composition of the officer force with greater accuracy.

3. Subjective Control

A third objective was to design the AID-O system to permit logical adjustment of probabilities where it is expected that planned future personnel policies will have different effects on officer loss behavior than past policies have had. As a result, the system was designed to allow analysts to subjectively adjust loss probabilities based on their expert knowledge. For example, if an early release program is being planned for all two-year obligated volunteer officers (OBV-2), it is

possible with the AID-O system to isolate the individuals who are OBV-2 and adjust their loss probabilities accordingly, while making no changes to other groups. This important capability provides the analyst with subjective control for evaluating alternate policies and their impact on the officer force.

4. User Flexibility

A final objective of the system was user flexibility. The system was designed to include various options and information maintenance capabilities which will reduce the necessity for programmer support.

C. REPORT ORGANIZATION

The remaining sections of this summary discuss the inner workings of the system, and the capabilities it provides to the manpower analyst.

Section II describes the various components of the AID-O system, the underlying statistical principles and assumptions, and the operational limitations.

Section III briefly describes the application of the AID-O system and the interpretation of the results.

Section IV presents the recommendations resulting from this study.

Readers requiring more specific information on the technical design and operation of the AID-O system are referred to the other volumes included in the companion set of documents which describe the model: Volume II, "Programmer/User Manual," and Volume III, "Analyst/Programmer Manual."

II. CONCEPTS OF AID-O

The AID Loss Probability System - Officers has evolved from a statistical technique known as Automatic Interaction Detector (AID), developed by the Survey Research Center of the Institute for Social Research at the University of Michigan. Other modules in the AID-O system were designed either to prepare the data needed for the AID analysis, or to summarize AID loss probabilities into suitable matrices for the Army's manpower projections.

A. BASIC ASSUMPTIONS

The analysis performed in the AID-O system assumes that changes in loss behavior for individuals result from changes through time to personal attributes (i.e., Age, Active Federal Service, Expiration of Current Service Agreement, etc.) and that variables which are important potential predictors of losses are represented by data elements on the Army's Officer Master Tape Record (OMTR).

Other external variables, which describe war or peace, the unemployment rate in civilian industries, and changing attitudes towards the Army, are all potentially important, but are not currently included in the AID-O system. If the values of these and other potentially important variables have been stable over several years and are expected to remain so in the immediate future, then they will have very little impact on the analysis. If the values of such omitted variables change frequently and become influencing factors on loss behavior in the future, however, predictions of losses based on the OMTR data may not immediately detect a shift in loss behavior over time.

The system design for AID-O permits the addition of new predictor variables to the OMTR data, should they become available to the Army. Data values for these extra variables can be added easily to the OMTR data during the editing process within the system.

B. LOGICAL TECHNIQUE

Within the services, personnel losses have been analyzed by many different statistical techniques, but loss analysis with AID presents the results in a particularly logical and appealing way for several reasons.

First, the AID statistical technique groups a population into several subgroups according to homogeneity of personal characteristics or attributes which influence loss behavior.

Second, the AID statistical technique is receptive to changes in Army strength and, more importantly, to the composition of the officer force characteristics or attributes over time. Such changes cause both growth and decay of certain population subgroups, affecting overall losses. The impact of these changes is automatically measured by AID.

Third, the AID statistical technique provides a useful basis for understanding why losses are occurring and for developing policies to influence particular types of losses. Knowledge of the attributes of individuals in the various groups is helpful in identifying specific target populations for special remedial policies and is also helpful in evaluating policy alternatives.

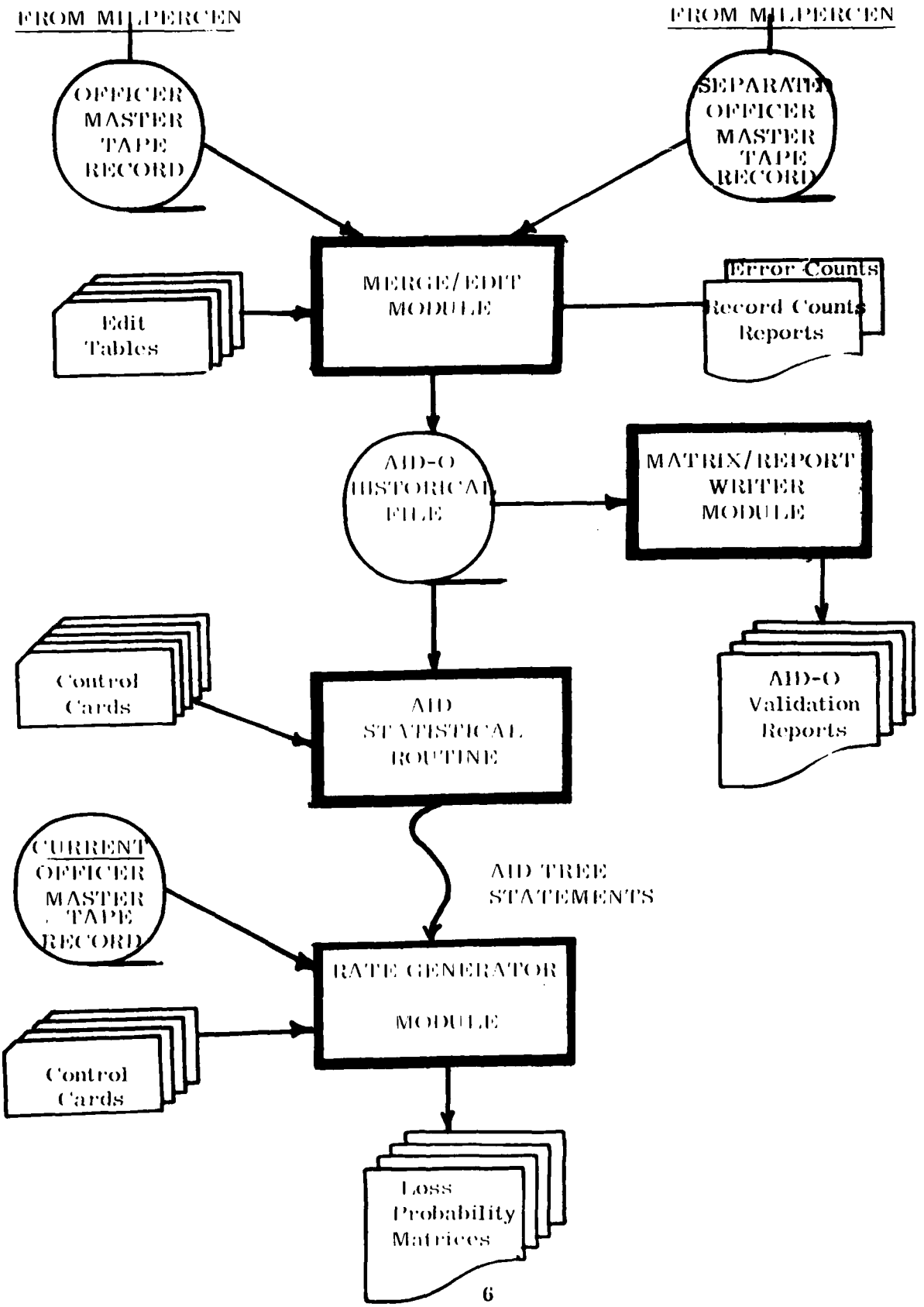
Fourth, the AID statistical technique permits the analyst to search a large number of predictor variables for all available information with regard to loss behavior. In addition, the system is capable of processing large quantities of data and different types of variables. While all variables analyzed in the AID statistical routine are numerical, a predictor variable may be used to provide categorical data (i.e., Race, Military Occupational Specialty, etc.) by numerically identifying distinct classifications. In other cases, there may be a natural and meaningful order to numerically converted categories. This is true for time related AID-O variables (i.e., Time in Grade, Active Federal Commissioned Service, etc.) and other variables such as: education level, grade, etc.

C. MAJOR COMPONENTS OF THE AID-O SYSTEM

The system generates annual loss probabilities on a planned yearly cycle. As depicted in FIGURE 2-1, there are four major components within the AID-O structure: the Merge/Edit Module, the Matrix/Report Writer Module, the AID Statistical Routine, and the Rate Generator Module. The function of each component and its relation to the other components are briefly described in the following sections.

FIGURE 2-1

AID-O SYSTEM FLOW DIAGRAM



1. Merge/Edit Module

The system starts with two basic sources of data. The first is the Officer Master Tape Record (OMTR), which contains approximately 140 data elements for each officer at a specific point in time. The second source of data is the Separated Officer Master Tape Record (SOMTR), which contains approximately 145 elements of data for each officer who has been separated from active duty during a specified time period (usually one year).

Using these two basic sources of data, the Merge/Edit module performs several important functions in preparing and editing the raw SOMTR and OMTR data into a form acceptable to the AID statistical routine.

a. SOMTR Selection

The first task performed is the selection or extraction of SOMTR records from the SOMTR file for a specified time period.

b. SOMTR Sort

Next, the extracted SOMTR data file is sorted by social security number in ascending sequence.

c. SOMTR/OMTR Merge

Then, using social security number as a key, the OMTR and SOMTR data files are merged into a single data file. When a match on social security number occurs, the loss data from the SOMTR record (last 100 characters) is appended to the OMTR record.

d. Edit and Conversion

Next, the data elements from this combined file are extracted and edited in a form acceptable for the AID statistical analysis. Each data element is edited against a range of acceptable values contained in a set of input tables or in the program logic. For data elements which are invalid, missing, or inconsistent, an attempt is made to reconstruct data from other data elements.

Each edited record is written out to a resulting file called the "AID-O HISTORICAL FILE." The record format and data values are in a form acceptable for the AID statistical routine. The data elements and definitions are listed in Appendix A of this report.

c. Error Diagnosis and Counts

Finally, two reports are created which display the record counts and summarize the errors encountered in the editing and conversion process.

The first report, "ERROR COUNTS FOR AID-O EDIT," generated in the Merge/Edit Module, summarizes the validity of each data element. A sample printout is shown in Appendix B. The printout lists the number of "valid," "invalid" and "reconstructed" counts for each data element in the AID-O HISTORICAL FILE.

The second report, "AID-O SUMMARY EDIT REPORT," generated in the Merge/Edit Module, summarizes the record counts for the various transaction types which identify the causes for loss. A sample printout is shown in Appendix C. The printout summarizes the total number of records for both the OMTR and SOMTR data files by officer category, component, and transaction type.

2. Matrix/Report Writer Module

The Matrix/Report Writer Module has a single source of input data, which is the AID-O HISTORICAL FILE. Using this source of data, the Matrix/Report Writer Module performs two important functions.

a. Report Matrices

First, a series of matrices containing the values used in the user's specified reports are generated by reading each record on the AID-O HISTORICAL FILE and incrementing the values for the various matrix cells.

b. Report Printout

Next, a series of reports designed to validate the AID-O input data and to automate the laborious manual computation effort (required to create loss rates) is displayed. Appendix D contains a list of titles and report numbers for the AID-O Validation Reports. Readers requiring more specific information on report format and content are referred to Volume II, "Planner/User Manual."

3. AID Statistical Routine

The AID-O HISTORICAL FILE is next analyzed by the AID Statistical Routine, which is the core of the AID-O system. Within the AID Statistical Routine, the analyst can further "recode" the data, select a specific sample population, or exclude certain individual records and variables(1). The primary output of the AID Statistical Routine is a collection of mutually exclusive statements identifying the attributes (characteristics) which best explain loss behavior for each subpopulation and an associated probability for loss.

a. Description of the AID Statistical Technique

The statistical technique ranks each explanatory or "predictor" variable according to its importance in explaining loss behavior by means of a binary step process. At each step the population is divided into all conceivable pairs of two mutually exclusive groups for each predictor variable. After examining, step by step, all pairs for all variables, the population is divided into two exclusive groups which account for the greatest amount of variance from the mean of the dependent variable (losses). The AID technique then searches for the next most important split that can be made in each of these groups. Then, the resulting sub-groups are again examined to determine where further splits can be made. The process stops when there are no further splits that are statistically significant within the limits provided by the user.

b. Hypothetical Example of Output from the AID Statistical Routine

The output from the AID-O system, a set of mutually exclusive statements which identify the subpopulation attributes and associated loss probabilities, can be drawn by the analyst as an upside-down "tree," tracing each statement from the point at which the trunk first splits (the most important predictor) to the tip of the lowest branch (the least important predictor). Since the statements are mutually exclusive, every individual in the population must belong to one (and only one) of these statements and its associated probability.

---

(1) "Recode" is the process of recoding an edited data value. It constitutes the reassigning of a data value according to a set of sequentially executed statements of instruction.

A hypothetical example of a binary "tree" that might result from applying the AID Statistical Routine to the AID-O HISTORICAL FILE is shown in FIGURE 2-2. In this illustration, the AID Statistical Routine is examining the loss behavior for RA Officers. The routine examines all possible predictors (30 to 40 variables) on each individual in the file and determines in the first step the split that accounts for the greatest variance in loss behavior. In other words, no split on any other basis can divide the officers into two groups having more similar loss behavior within each group. Then the AID routine examines the next group and predictors to determine what further splits can be made. This process continues until cummulative variance, explained by a specified number of steps or a limit on total variance in cummulated steps, reaches a certain point.

In this hypothetical example, only three sets of splits are shown for simplicity. The most important predictor is RA Promotion Passover. The binary split occurs between those who have been passed-over for promotion and those who have not. The next most important predictor is Temporary Grade, then Control Branch. Note that a loss probability is associated with each cell on the AID "tree." The terminal cell probabilities (tip of the lowest branch) are flagged by asterisks. Splitting was terminated at cell numbers 2, 4, 6, and 7 because no further splits would be statistically significant (within the limits set by the user).

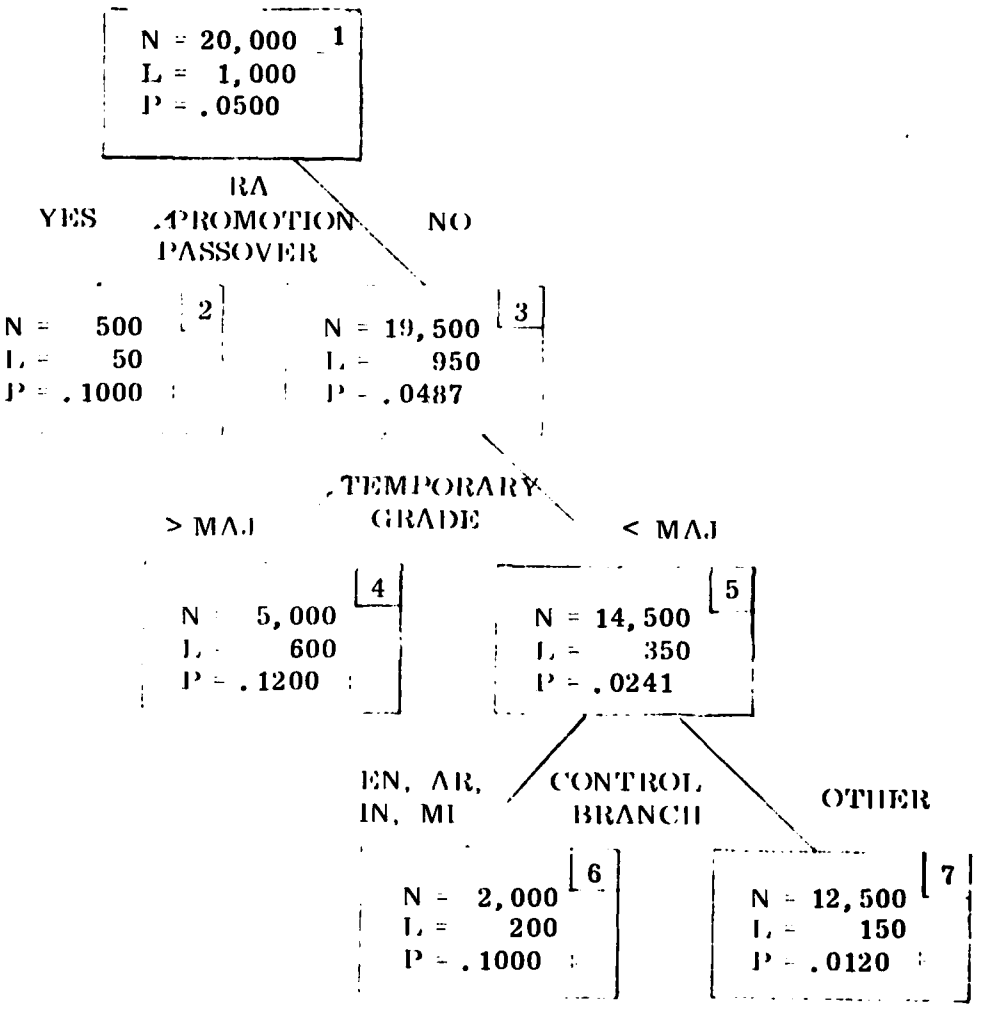
For the above hypothetical example, the set of mutually exclusive statements which identify the subpopulation attributes and associated loss probabilities for each terminal cell can be described by the following statements:

Terminal Cell	Statement	Probability
2	No Promotion Passover	.1000
4	Promotion Passover, Temporary Grade greater than Maj.	.1200
6	Promotion Passover, Temporary Grade less than Maj., Control Branch equal Corps of Engineers, Artillery, Infantry, or Military Intelligence	.1000
7	Promotion Passover, Temporary Grade less than Maj., Control Branch does not equal Corps of Engineers, Artillery, Infantry, or Military Intelligence	.0120

These statements completely describe the hypothetical AID tree, depicted in FIGURE 2-2.

FIGURE 2-2

HYPOTHETICAL EXAMPLE RA OFFICER LOSSES



KEY

N = Number of Officers
L = Number of Officers lost within subpopulation
P = Probability of loss for subpopulation

4. Rate Generator Module

The final module to be executed in the AID-O system is the Rate Generator Module. Two basic sources of information needed in this module are a set of mutually exclusive statements which describe the AID "tree," and the current OMTR which is usually taken at the start of the current fiscal year.

Two important functions are performed by the Rate Generator Module.

a. OMTR Edit

The current OMTR, which is usually taken at the start of the current fiscal year, is edited in a form identical to the AID-O HISTORICAL FILE. Similarly, each data element is edited against a range of acceptable values contained in a set of input tables or in the program logic.

b. Loss Probability Matrices

Each record in this edited file is then interrogated to compare the personal attributes of each individual in the current edited OMTR to the statements which identify the AID "tree," and to assign a loss probability to each individual in the current edited OMTR.

Then, in order to produce loss rates in a certain format (for example, by grade and control branch), the individual records in the current OMTR are sorted by grade and control branch; the loss probabilities of all individuals in each grade and control branch are summed; and the sum is divided by the number of individuals in that cell. This provides the analyst with the capability of creating virtually any loss probability in any matrix forms, constrained only by the number of data elements contained in the OMTR.

D. AID-O VARIABLES

The variables used in the AID-O system are defined in Appendix A. Several variables may seem redundant, but they serve the useful purpose of reconstructing missing data and cross-checking the validity of variables.

Section III contains a sample of actual results of the AID-O system. In these results, some variables appear more often than others as loss predictors. Certain variables currently appear more frequently than others as important predictors; but in other time periods, these variables may become less important. The quality of some data may prohibit the current use of these data elements, but it is possible that the quality of these data values may improve over time.

The AID-O system is capable of analyzing a very large number of variables simultaneously, but variables in the AID-O system can be used for any of the following functions:

1. Predictors or Independent Variables

Most of the variables in the AID-O system are used as predictor variables. Each of these variables identifies or classifies the specific attribute (characteristic) of an individual which is subsequently used to predict loss behavior.

2. Dependent Variable or Loss Transaction

In creating loss probabilities, loss transaction or type of loss must always be the dependent variable(1). The various loss transactions for both officers and warrant officers are identified in TABLE 2-1. Numerous computer runs using the AID Statistical Routine were made by officer category (Officer; RA, OTRA and Warrant Officer; RA, OTRA) and loss transaction. Subgrouping of loss transactions (analyzing more than one loss transaction) can often improve the reliability of the loss probabilities, especially if the number of losses for a particular loss transaction is very small.

3. Filter Variables

Variables used to exclude certain individuals or other variables are called filter variables. For example, a random sample in the AID analysis is selected in increments of ten percent by using the last digit of the social security number as a filter variable. Also, error codes can be used in controlling the quality of variables in the AID analysis.

---

(1) Many variables may be appropriately used as dependent variables for special studies.

TABLE 2-1

LOSSES BY TRANSACTION NUMBER

	TRANSACTION NUMBER
Regular Army	
Voluntary Retirement	1
Mandatory Retirement	2
Disability Retirement	3
Unqualified Resignations	4
Miscellaneous Losses	5
Other Than Regular Army	
Non-Disability Retirement	6
Disability Retirement	7
OBV-2 Completion	8
REFRAD	9
Miscellaneous Losses	10

4. Matrix Variables

Some variables may not be used as predictors, but may be necessary to create a matrix of loss probabilities. For example, "current assignment" may not be an appropriate predictor for a loss analysis, but the data element may be required to create a matrix of loss probabilities (through the Rate Generator Module) by current assignment and branch.

E. GENERATING LOSS PROBABILITIES

TEMPO has identified two different methods for generating loss probabilities using the AID Statistical Routine: direct and indirect methods.

1. Direct Method

The direct method uses the output from a single AID "tree," which is generated from the ratio of the number of losses for a specific transaction type (loss cause) to the total number of individual officers in that officer category (similar to the hypothetical example in section C-3). The resulting AID "tree" is input to the Rate Generator Module and the loss probabilities are produced in the desired format as described in the previous section.

2. Indirect Method

A second method was developed and validated by TEMPO during the development of the AID Loss Probability System - Enlisted (AID-E). This method, which is particularly suitable for analyzing loss categories with a small number of losses, requires two AID "trees" and is known as the indirect method.

The first tree is produced by AID using the ratio of all losses (irrespective of loss cause) to the total number of individual officers in that officer category. The second tree is produced by AID using the ratio of the number of losses for a specific loss cause to all losses. The two trees are transferred to the Rate Generator Module in which the following steps are taken to generate loss probabilities in the desired format.

a. Step 1 - The attributes of each individual in the current edited OMTR are compared with the AID output statements for both trees.

b. Step 2 - Each individual is assigned two loss probabilities, one from each tree.

c. Step 3 - The two independent probabilities are multiplied to produce a single probability.

d. Step 4 - The loss probabilities for each individual are summed and divided by the number of persons in that cell.

The choice of one method over the other depends upon statistical considerations, the number of transaction categories to be analyzed, and the amount of computer time required. The indirect method should be chosen when several loss causes are being analyzed and the number of losses for each cause is extremely small in comparison to the officer category being studies. As the ratio of the number of losses to the number of officers in the officer category being analyzed approaches one, the direct method becomes more appropriate to use.

F. RESOURCES REQUIRED TO OPERATE THE AID-O SYSTEM

The operation of the AID-O system requires an extensive investment annually for both manpower and computer resources. Below is a list of manpower and computer resources required to create loss probabilities for the CIM-O model:

OPERATIONAL RESOURCES

Manpower Analyst	2 man-days
Programmer Analyst	5-10 man-days
CPU Time	200-250 minutes
Magnetic Tapes	5 reels
Clerical Support	5 man-days

The resources required to operate the system are obviously expensive. However, the budgetary saving which will result from more accurate manpower projections will far outweigh costly errors in manpower management. Over a period of time, the AID-O system, after thorough validation and acceptance, will replace the current laborious task of manual computation by both the AID-O Validation Reports and the loss probability matrices created in the Rate Generator Module.

III. APPLICATION OF THE AID-O SYSTEM AND INTERPRETATION OF THE RESULTS

A. INTRODUCTION

The purpose of this section is to summarize, interpret, and evaluate the initial results produced by the AID-O system. This section will provide direction in a continuing effort to create accurate loss probabilities using the AID-O system. For a complete discussion of the statistical formulae used in the AID analysis, the meanings of these formulae, and the options available in the AID-O system, readers are referred to Volume II of the AID-O documentation.

B. DATA USED FOR VALIDATION OF THE AID-O SYSTEM

For the purposes of testing the reliability and validity of the AID-O system, data for both FY72 and FY73 were used. For the FY72 data, the OMTR data file for the beginning of FY72 was merged with the SOMTR data for losses which occurred during FY72. For FY73 data, the OMTR data file for the beginning of FY73 was merged with the SOMTR data for losses which occurred during FY73. The two merged files were then edited and prepared in a format acceptable for processing by the AID statistical routine.

This section presents the results of the AID statistical analysis using both FY72 and FY73 data.

C. OBSTACLES TO COMPREHENSIVE SYSTEM EVALUATION

A number of significant problems were encountered in attempting to evaluate the accuracy of the loss probabilities developed with the AID-O system:

1. Changing Data Codes

As is the case with most historical data files, the data element codes for the variables contained on these files often change from one time period to the next. The data values on the OMTR and SOMTR did change from FY72 to FY73, resulting in some loss of accuracy.

2. Data Element Validity

The validity of many data elements contained on each of these files has improved significantly since the end of FY72. The edit reports produced by the AID-O system display a significant decrease in the number of data elements with invalid codes or values (on the order of 20% to 30% improvement). Since our validation tests were based on FY72 data, however, we would expect some loss of accuracy in our predictions because of invalid data.

3. Policy Changes

Finally, during FY72 and FY73 several policy changes were implemented which had substantial impact on loss rates. During this period, the Vietnam conflict continued to diminish, which eventually necessitated a RIF (Reduction in Force) and an early release program. As discussed earlier, these types of policy changes are not represented by data elements within the AID-O system and consequently cannot be accurately evaluated.

D. RESULTS OF THE VALIDATION TESTS

A set of validation tests were designed to isolate as accurately as possible the error that could be attributed to each of the problems previously described. To accomplish this goal, three validation tests were defined.

1. Test 1

The first test was designed to provide a detailed understanding of the input data. In order to have a viable system for generating loss probabilities (manual or automated), a clear understanding of the definition of each data element and the associated data values is essential. To provide this common basis or foundation on which to build, a series of reports (20 reports) referred to as the AID-O Validation Reports[1] was designed to automate the current laborious manual computational effort required to create loss rates within OPD.

Duplicating the current manual process did provide us with a common basis for understanding the data element definitions. Several iterations between OPD and GE-TEMPO were required to validate the manipulation of the various data elements. The automated reports for the FY73 data were reviewed and validated by OPD. After careful

(1) For an example of the AID-O Validation Reports, see Volume II, Appendix B1 and Appendix B2.

review by TEMPO analysts, it was determined that some of the data codes used in the FY72 reports changed and were not incorporated in the AID-O system. Since the FY73 reports were validated, and in an effort to effectively apply the project resources to worthwhile activities, the complete validation of the FY72 reports was abandoned. The procedures and data element codes in the AID-O system will be valid for the FY74 data.

2. Test 2

The second validation test was designed to preclude the possibility of changes in the data element definitions and codes from one year to the next, and measure sampling error. In order to explore the accuracy obtained by various size samples, losses predicted on the basis of AID-developed probabilities were compared with actual losses experienced in FY72. Two random samples (mutually exclusive of one another) were taken from the same data file for a specific fiscal year. The first sample was used to construct the AID tree. Officers in the second sample were classified according to the subpopulations defined by the AID tree and a loss probability was associated with each officer. Then the loss probabilities by branch were multiplied by the various branch populations to obtain the predicted number of losses. The predicted number of losses was then compared to the number of officers in the sample who were actually lost during FY72.

FIGURE 3-1[(1)] displays an AID tree for RA Officer Disability Retirements for a 30% random sample. TABLE 3-1 displays the results of using this AID tree and a second random sample of 30% to perform the test described above. Note that the error which can only be attributed to sampling is 6.8%. The results from this test and other similar tests indicated that a larger sample is required for this level of detail, and has prompted the recommendation that the entire population be used in the officer AID analysis.

3. Test 3

The third and perhaps most important test uses both FY72 and FY 73 data. The FY72 data was used to construct the AID trees. Then, using the FY72 AID trees, the Rate Generator module classified the FY73 records according to the subpopulations defined in the AID trees and a corresponding AID probability was assigned to each record.

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(1) See Appendix E for definitions of variable codes used in the AID trees.

Next, the loss probabilities by branch were multiplied by the various branch populations to obtain the predicted number of losses. The predicted number of losses for each branch, using the AID-developed probabilities, was then compared to the actual number of losses and to the predicted losses developed by the procedures described by OPD.

FIGURES 3-1, 3-2, 3-3, and 3-4[1] display the AID trees used for this test. TABLES 3-2, 3-3, 3-4 and 3-5 display the results of the tests described above. Note that in each case, the prediction of losses using AID has been demonstrated to be more accurate than the current procedures used by OPD. It should be noted, however, that in an actual operational situation both sets of predictions (AID-O and OPD) would be subjectively adjusted based upon the knowledge and understanding of current policy alternatives.

E. CONCLUSIONS

1. GE-TEMPO is pleased with the results of these validation tests. These tests have demonstrated that the AID-O system will create loss probabilities with greater accuracy than current procedures. TEMPO analysts estimate that officer loss prediction error can be reduced by 50% to 60% using AID-developed loss probabilities.

2. The automated reports (AID-O Validation Reports), which duplicate current manual procedures, will prove valuable in the initial implementation phases of the AID-O system, enabling manpower analysts within OPD to more effectively apply their knowledge and skill to manpower studies.

3. The sample size for the various AID computer runs should be 100% of the officer population being analyzed.

4. Policy alternatives can be more accurately analyzed using the AID-O system. The subjective adjustment of loss probabilities can be directed to specific subpopulations clearly identifiable by the attributes of interest. Then loss probability matrices can be created using the Rate Generator module. This capability for the first time enables the manpower analyst to direct his knowledge to a few subpopulations as opposed to many (one for each probability cell).

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(1) See Appendix E for definitions of variable codes used in the AID trees.

5. The officer loss probabilities created by AID-O are currently not as accurate as the enlisted loss probabilities created by AID-E. The variables contained on the officer data file do not explain (predict) losses as accurately as those contained on the enlisted file[1].

6. The accuracy of the loss probabilities created in the AID-O system will definitely improve as the validity of the data contained in the officer personnel files improves.

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1. The correlation coefficients for the officer AID trees were on the order of 5-25%; whereas, the correlation coefficients for the enlisted AID trees were on the order of 15-60%.

VARIABLE CODES FOR FIGURE 3-1

Control Branch (CTLBR) for both officers and warrant officers is the same as Basic Branch (BASBR). The edited and AID-recode values and their meanings are the same: the branch within the Office of Personnel Operations responsible for initiating assignments and other personnel actions for an officer.

Code	Meaning	Edited Values Officer	WO
AD	Air Defense Artillery	02	01
AG	Adjutant General's Corps	11	08
AN	Army Nurse Corps	83	13
AR	Armor	01	00
AS	Army Security (old)	14	10
AT	Artillery (old)	03	03
AV	Aviation	00	14
CH	Chaplains	16	00
CM	Chemical Corps	05	00
DE	Dental Corps	19	00
EN	Corps of Engineers	06	03
FA	Field Artillery	03	03
FI	Finance Corps	12	09
GO	General Officers	25	00
IN	Infantry	04	00
JA	Judge Advocate General's Office	17	11
MC	Medical Corps	18	00
MI	Military Intelligence	14	10
MP	Military Police Corps	13	09
MS	Medical Service Corps	21	13
OD	Ordnance Corps	07	04
PR	Professors, USMA	22	00
QM	Quartermaster Corps	08	05
SC	Signal Corps	09	06
SP	Army Medical Specialist Corps	84	00
TC	Transportation Corps	10	07
VC	Veterinary Corps	20	00
WC	Women's Army Corps	15	00

Troop Duty (TD) is a code identifying the number of months of troop duty served by an individual.

Code	Meaning
1	48 months or more
2	42-47 months
3	36-41 months
4	30-35 months
5	24-29 months
6	18-23 months
7	12-17 months
8	less than 12 months

Primary MOS's *

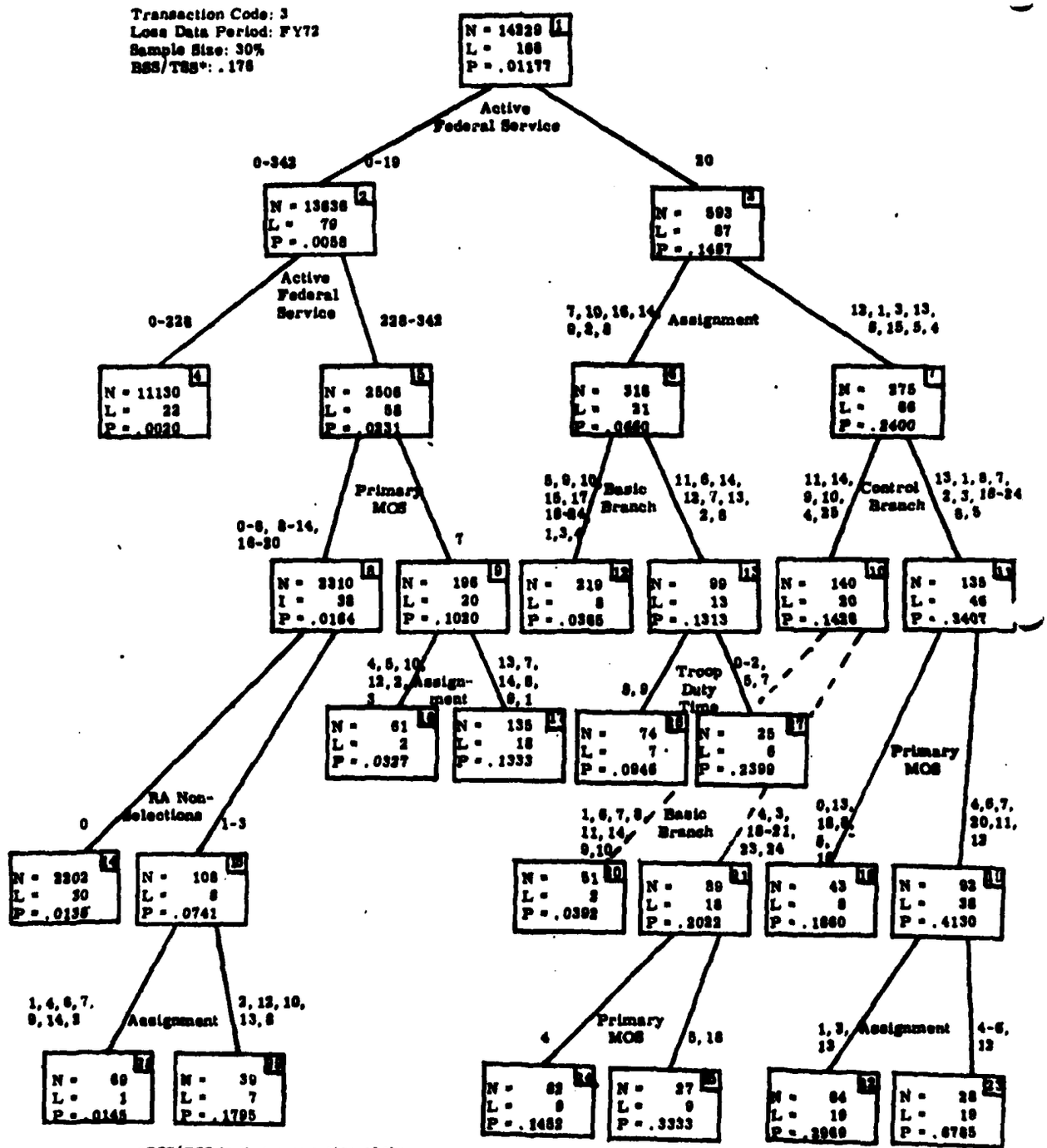
*See Appendix E for a complete list of AID tree code definitions.

Assignment (known as Command, Current Assignment) (CAC) is both for officers and warrant officers.

Code	Meaning	Edited Value
4A	Fourth US Army	
1A	First US Army	01
3A	Third US Army	02
5A	Fifth US Army	03
6A	Sixth US Army	04
AD	US Army Air Defense Command, including Command and Regional Hdqtrs.	16
CA	Hdqtrs., US Continental Army Command	01
CB	US Army Criminal Investigation Command (USACIDC)	13
CC	US Army Strategic Communications Command	13
CD	US Army Combat Developments Command	13
IC	US Army Intelligence Command	13
MT	Military Traffic Management and Terminal Service	13
MW	Military District of Washington	14
M1	Hdqtrs., US Army Material Command	13
M2	US Army Electronics Command	13
M3	US Army Missile Command	13
M4	US Army Tank Automotive Command	13
M5	US Army Munitions Command	13
M6	US Army Aviation Material Command	13
M7	US Army Test and Evaluation Command	13
M8	US Army Weapons Command	13
M9	US Army Mobility Equipment Command	13
SA	Office, Secretary of the Army	14
CS	Office, Chief of Staff, US Army	14
AG	The Adjutant General	14
AU	Army Audit Agency	14
CE	Chief of Engineers	14
MD	The Surgeon General	13
SF	Other Field Activities of Army Staff (Field activities assigned to DCSPER, ACSI, ACSC-E, OCA, DCSOPS, CRD, DCSLOG, ACSFOR, CORC, COPO, Chief of Chaplains, The Provost Marshal General, Chief of Information, TJAG, and Chief of Support Services.)	14
AS	US Army Security Agency	16
SD	Dept. of Defense and US Army Elements of Joint Activities	14
AL	US Army Alaska	06
C1	US Army Forces Southern Command	06
E1	Hdqtrs., US Army Europe	07
E2	US Army Theater Army Support Command, Europe	07
E3	SETAF	
E4	Berlin Command	07
E7	Seventh US Army	07
P1	Hdqtrs., US Army Pacific	09
P2	US Army, Hawaii	09
P3	US Army, Japan	09
P5	US Army, Japan	09
P6	Hdqtrs., US Army Control, Thailand	10
P7	US Army, Taiwan	10
P8	Eighth US Army (Korea)	11
JA	Joint Activities	09
DF	Defense Agencies	14
HS	US Army Health Services Command	16
CM	US Army Computer Systems Command	13
RC	US Army Recruiting Command	13
SC	Safeguard Systems Command	13
MA	US Military Academy	13
GB	National Guard Bureau	17
FC	US Army Forces Command	14
TC	US Army Training and Doctrine Command	13
CB		09
SV		14

FIGURE 3-1

AID TREE FOR DISABILITY RETIREMENTS
- RA OFFICERS (FY72)



*BSS/TSS is that proportion of the total sum of squares explained by a given number of AID splits--a type of correlation coefficient.

N=Population
L=Number of Losses
P=L/P=Loss Probability

VARIABLE CODES FOR FIGURE 3-2

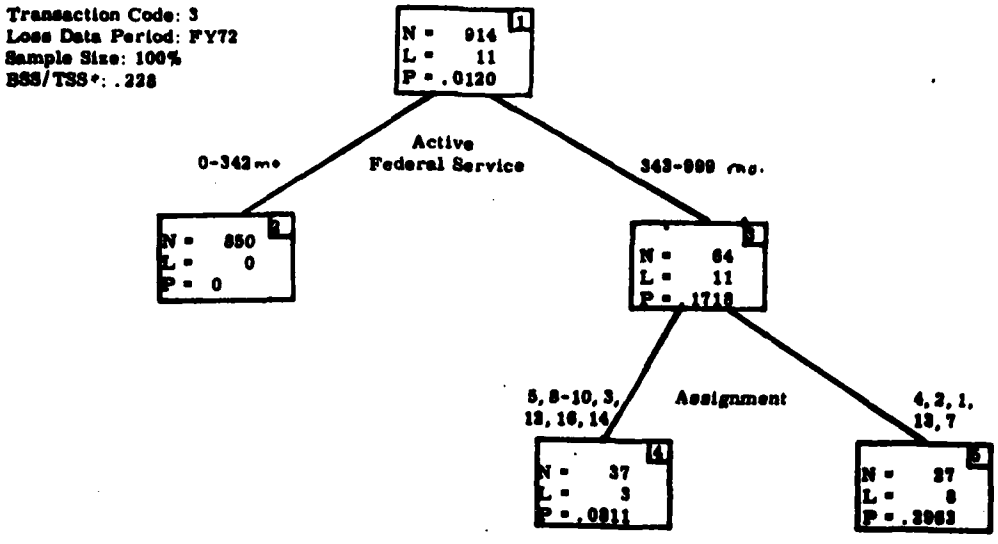
Assignment (known as Command, Current Assignment) (CAC) is both for officers and warrant officers.

Code	Meaning	Edited Value
4A	Fourth US Army	
1A	First US Army	01
3A	Third US Army	02
5A	Fifth US Army	03
6A	Sixth US Army	04
AD	US Army Air Defense Command, including Command and Regional Hdqtrs.	16
CA	Hdqtrs., US Continental Army Command	01
CB	US Army Criminal Investigation Command (USACIDC)	13
CC	US Army Strategic Communications Command	13
CD	US Army Combat Developments Command	13
IC	US Army Intelligence Command	13
MT	Military Traffic Management and Terminal Service	13
MW	Military District of Washington	14
M1	Hdqtrs., US Army Material Command	12
M2	US Army Electronics Command	12
M3	US Army Missile Command	12
M4	US Army Tank Automotive Command	12
M5	US Army Munitions Command	12
M6	US Army Aviation Material Command	12
M7	US Army Test and Evaluation Command	12
M8	US Army Weapons Command	12
M9	US Army Mobility Equipment Command	12
SA	Office, Secretary of the Army	14
CS	Office, Chief of Staff, US Army	14
AG	The Adjutant General	14
AU	Army Audit Agency	14
CE	Chief of Engineers	14
MD	The Surgeon General	13
SV	Other Field Activities of Army Staff (Field activities assigned to DCSPER, ACSI, ACSC-E, OCA, DCSOPS, CRD, DCSLOG, ACSFOR, CORC, COPO, Chief of Chaplains, The Provost Marshal General, Chief of Information, TJAG,	14
AS	US Army Security Agency	16
SD	Dept. of Defense and US Army Elements of Joint Activities	14
AL	US Army Alaska	08
C1	US Army Forces Southern Command	06
E1	Hdqtrs., US Army Europe	07
E2	US Army Theater Army Support Command, Europe	07
E3	SETAF	07
E4	Berlin Command	07
E7	Seventh US Army	07
P1	Hdqtrs., US Army Pacific	08
P2	US Army, Hawaii	08
P3	US Army, Japan	09
P5	US Army, Japan	10
P6	Hdqtrs., US Army Control, Thailand	10
P7	US Army, Taiwan	11
P8	Eighth US Army (Korea)	09
JA	Joint Activities	14
DF	Defense Agencies	14
HS	US Army Health Services Command	13
CM	US Army Computer Systems Command	13
RC	US Army Recruiting Command	13
SC	Safeguard Systems Command	13
MA	US Military Academy	17
GB	National Guard Bureau	14
FC	US Army Forces Command	13
TC	US Army Training and Doctrine Command	13
CS		06
SV		14

*See Appendix E for complete list of AID tree code definitions.

FIGURE 3-2

AID TREE FOR DISABILITY RETIREMENTS - RA WARRANT OFFICERS (FY72)



*BSS/TSS is that proportion of the total sum of squares explained by a given number of AID splits-- a type of correlation coefficient.

N=Population
L=Number of Losses
P=L/P=Loss Probability

VARIABLE CODES FOR FIGURE 3-3

Control Branch (CTLBR) for both officers and warrant officers is the same as Basic Branch (BABR). The edited and AID-recode values and their meanings are the same: the branch within the Office of Personnel Operations responsible for initiating assignments and other personnel actions for an officer.

Code	Meaning	Edited Values Officer	WO
AD	Air Defense Artillery	02	01
AG	Adjutant General's Corps	11	08
AN	Army Nurse Corps	23	12
AR	Armor	01	00
AS	Army Security (old)	14	10
AT	Artillery (old)	03	02
AV	Aviation	00	14
CH	Chaplains	18	00
CM	Chemical Corps	05	00
DN	Dental Corps	19	00
EN	Corps of Engineers	06	03
FA	Field Artillery	03	02
FI	Finance Corps	12	00
GO	General Officers	25	00
IN	Infantry	04	00
JA	Judge Advocate General's Office	17	11
MC	Medical Corps	18	00
MI	Military Intelligence	14	10
MP	Military Police Corps	13	09
MS	Medical Service Corps	21	13
OD	Ordnance Corps	07	04
PR	Professors, USMA	22	00
QM	Quartermaster Corps	05	05
SC	Signal Corps	09	06
SP	Army Medical Specialist Corps	24	00
TC	Transportation Corps	10	07
VC	Veterinary Corps	20	00
WC	Women's Army Corps	15	00

Primary MOS's (PMOS's)

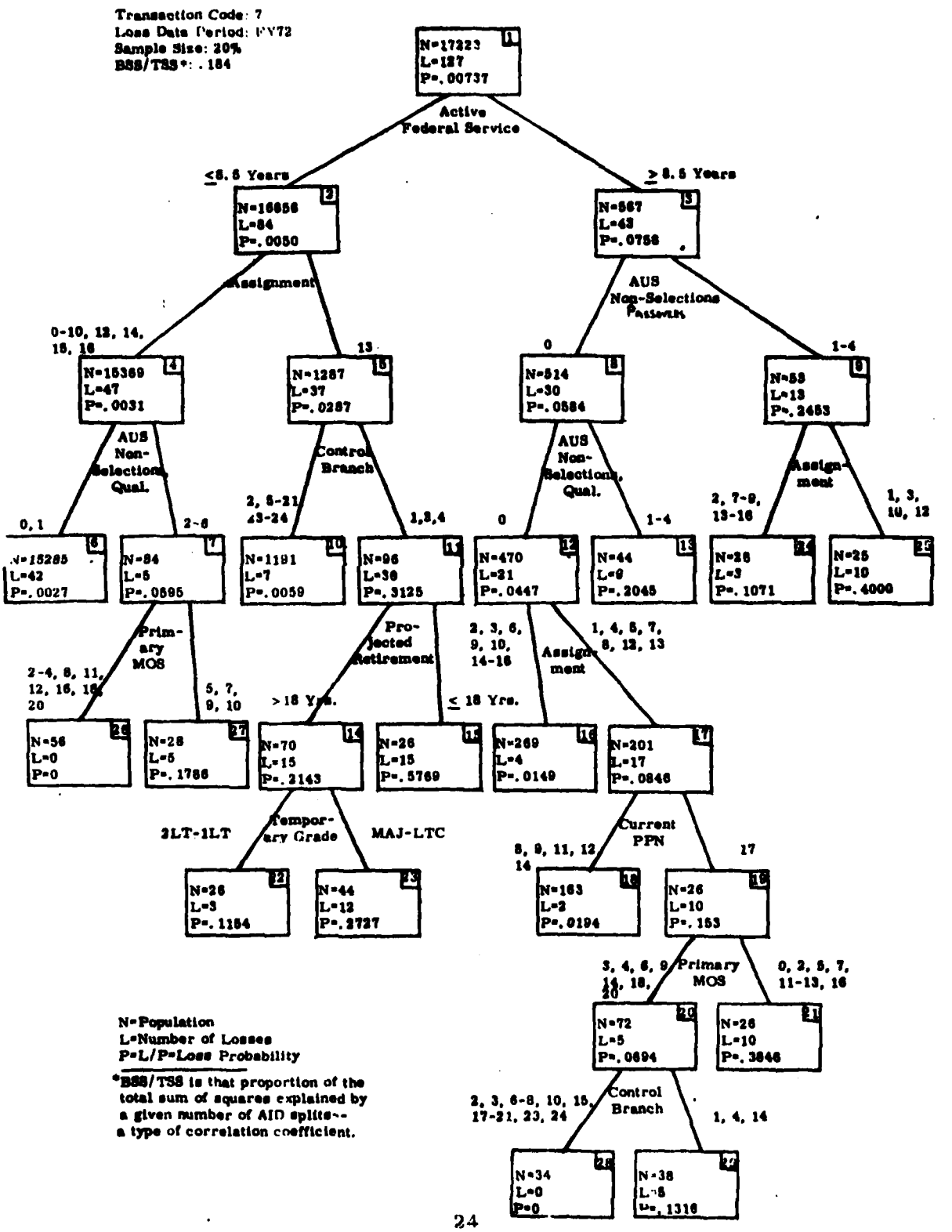
*See Appendix E for complete list of AID tree code definitions.

Assignment (known as Command, Current Assignment) (CAC) is both for officers and warrant officers.

Code	Meaning	Edited Value
4A	Fourth US Army	
1A	First US Army	01
3A	Third US Army	02
5A	Fifth US Army	03
6A	Sixth US Army	04
AD	US Army Air Defense Command, including Command and Regional Hdqtrs.	16
CA	Hdqtrs., US Continental Army Command	01
CE	US Army Criminal Investigation Command (USACIDC)	13
CC	US Army Strategic Communications Command	13
CD	US Army Combat Developments Command	13
IC	US Army Intelligence Command	13
MT	Military Traffic Management and Terminal Service	13
MW	Military District of Washington	14
M1	Hdqtrs., US Army Material Command	12
M2	US Army Electronics Command	12
M3	US Army Missile Command	12
M4	US Army Tank Automotive Command	12
M5	US Army Munitions Command	12
M6	US Army Aviation Material Command	12
M7	US Army Test and Evaluation Command	12
M8	US Army Weapons Command	12
M9	US Army Mobility Equipment Command	12
SA	Office, Secretary of the Army	
CS	Office, Chief of Staff, US Army	
AG	The Adjutant General	14
AU	Army Audit Agency	14
CE	Chief of Engineers	14
MD	The Surgeon General	13
SF	Other Field Activities of Army Staff (Field activities assigned to DCSPER, ACSI, ACSC-E, OCA, DCSOPS, CRD, DCSLOG, ACSFOR, CORC, COPO, Chief of Chaplains, The Provost Marshal General, Chief of Information, TJAG, and Chief of Support Services.)	14
AS	US Army Security Agency	15
SD	Dept. of Defense and US Army Elements of Joint Activities	14
AL	US Army Alaska	06
C1	US Army Forces Southern Command	06
E1	Hdqtrs., US Army Europe	07
E2	US Army Theater Army Support Command, Europe	07
E3	SETAF	07
E4	Berlin Command	07
E7	Seventh US Army	07
P1	Hdqtrs., US Army Pacific	08
P2	US Army, Hawaii	08
P3	US Army, Japan	08
P5	US Army, Japan	10
P6	Hdqtrs., US Army Control, Thailand	10
P7	US Army, Taiwan	11
P8	Eighth US Army (Korea)	09
JA	Joint Activities	14
DF	Defense Agencies	14
HS	US Army Health Services Command	13
CM	US Army Computer Systems Command	13
RC	US Army Recruiting Command	13
SG	Safeguard Systems Command	13
MA	US Military Academy	17
GB	National Guard Bureau	1[illegible]
FC	US Army Forces Command	13
TC	US Army Training and Doctrine Command	13
CS		08
SV		14

FIGURE 3-3

AID TREE FOR DISABILITY RETIREMENTS
- OTRA OFFICERS (FY72)



VARIABLE CODES FOR FIGURE 3-4

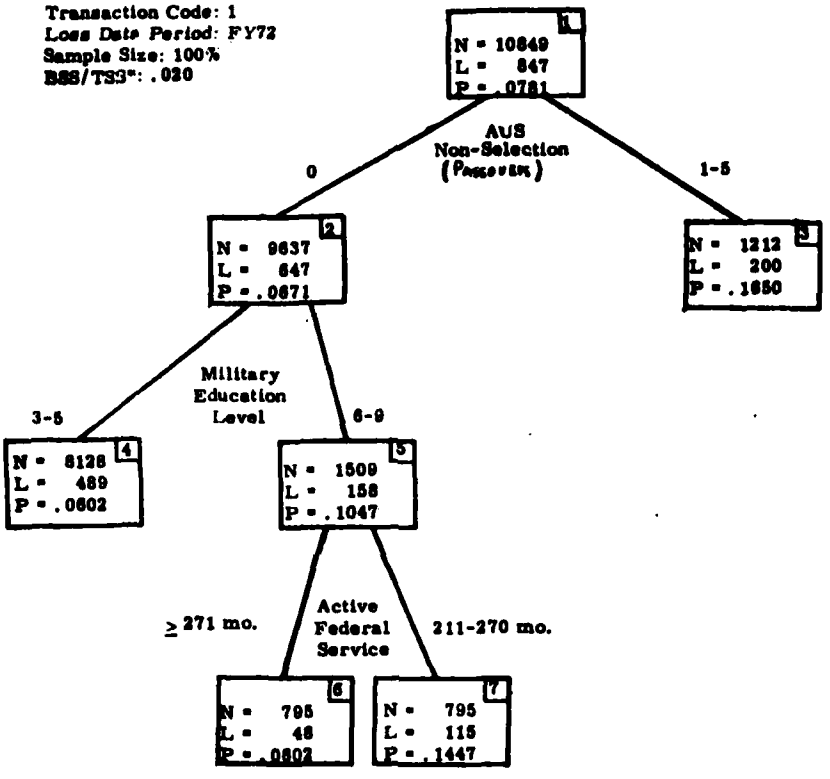
Military Educational Schooling Level (MEL) identifies the highest military educational institution attended.

Code		Meaning	Edited Value
Attended	Constructive or Equivalent		
0-2	-		0-2
3	L	National War College; Industrial College of the Armed Forces; Army, Air, and Navy Warfare College.	3
4	-	-	0
5	N	Army, Navy, Air and Marine Corps Command and General Staff Colleges; Armed Forces Staff College.	5
6	O	Advanced Branch School	6
7	P	Basic Branch School	7
8	Q	Specialist Courses	8
9	-	Negative	0
-	X	Deletion	0

*See Appendix E for complete list of AID tree code definitions.

FIGURE 3-4

AID TREE FOR VOLUNTARY RETIREMENTS
- RA OFFICERS (FY72)



*BSS/TSS is that proportion of the total sum of squares explained by a given number of AID splits--a type of correlation coefficient.

N=Population
L=Number of Losses
P=L/P=Loss Probability

TABLE 3-1

COMPARISON OF ACTUAL AND PREDICTED LOSSES
USING FY72 AID TREE TO PREDICT FY72 LOSSES
OFFICER RA DISABILITY RETIREMENTS

Branch	Officers per Branch	AID Loss Probabilities	AID Predicted Losses	Actual Losses
AR-1	1184	1.29	15.3	11
AD-2	756	1.16	8.8	9
FA-3	1875	1.22	22.9	20
IN-4	3213	.88	28.7	47
CM-5	225	1.18	2.7	0
EN-6	948	.86	8.2	6
OD-7	648	.96	6.2	7
QM-8	502	1.32	6.6	1
SC-9	844	.60	5.1	6
TC-10	621	.75	4.7	6
AG-11	329	.62	2.0	4
FI-12	169	.78	1.3	3
MP-13	267	1.15	3.1	2
MI-14	591	.63	3.7	4
WC-15	43	1.10	.5	1
CH-16	116	.52	.6	0
JA-17	194	.48	.9	4
MC-18	411	1.61	6.6	9
DE-19	227	1.84	4.2	2
VC-20	69	2.71	1.9	1
MS-21	676	.99	6.7	7
PR-22	2	2.50	.1	1
AN-23	261	2.51	6.6	8
SP-24	44	3.55	1.6	1
TOTAL	14049		149.0	160

6.8% Error

Two 30% random samples (mutually exclusive) were used to measure sampling error (validation test b.). The first sample was used to create an AID tree. The officers in the second sample were then classified by the subpopulations identified within the AID tree and a probability was associated with each officer record. The resulting probabilities by branch were then multiplied by the number of officers in each branch to obtain the AID Predicted Losses. The prediction error is 6.8%.

TABLE 3-2

COMPARISON OF ACTUAL, AID PREDICTED, AND OPD PREDICTED LOSSES USING A FY72 AID TREE TO PREDICT FY73 LOSSES OFFICER RA DISABILITY RETIREMENTS

Branch	Officers per Branch	AID Loss Probabilities	AID Predicted Losses	OPD Loss Probabilities	OPD Loss Prediction	Actual Losses
AR-1	1217	1.09	13.3	.97	11.8	9
AD-2	723	.99	7.2	1.42	10.3	7
FA-3	1866	1.05	19.6	1.00	18.7	13
IN-4	3173	.86	27.5	1.25	39.7	32
CM-5	171	1.03	1.8	.89	1.5	3
EN-6	849	.95	8.0	.73	6.2	2
OD-7	637	1.08	6.9	.73	4.7	3
QM-8	477	.70	3.4	1.09	5.2	2
SC-9	811	.58	4.7	.67	5.5	6
TC-10	563	.61	3.4	.71	4.0	5
AG-11	382	.75	2.9	1.11	4.2	3
FI-12	151	.43	.6	1.32	2.0	1
MP-13	285	.96	2.7	1.73	4.9	3
MI-14	753	.58	4.3	.69	5.1	5
WC-15	41	.62	.3	1.31	.6	0
CH-16	171	.56	.5	.72	.9	1
JA-17	185	.53	1.0	1.33	2.5	3
MC-18	577	1.75	6.6	2.54	9.6	9
DE-19	183	1.58	2.9	1.16	2.1	2
VC-20	55	1.74	1.0	1.52	.8	0
MS-21	689	.87	6.0	1.40	9.6	3
PR-22	8	2.66	.2	4.55	.4	0
AN-23	243	2.30	5.6	3.44	8.4	3
SP-24	55	2.75	1.5	1.17	.6	0
TOTAL	14007		131.7		159.3	116

13.5% AID Prediction Error
37.3% OPD Prediction Error

Two 30% random samples, one from FY72 data and one from FY73 data, were used in this validation test. The FY72 sample was used to create an AID tree. The officers in the FY73 sample were classified by the subpopulations identified within the AID tree and probability was associated with each officer record. The resulting probabilities by branch were then multiplied by the number of officers in each branch to obtain the "AID Predicted Losses." The OPD loss probabilities have been extracted from the AID-O Validation Reports for a 100% sample. Similarly, the probabilaties associated with each branch are multiplied by the officers within the branch to obtain "OPD Loss Prediction." The "Actual Losses" is the actual number of officer losses by branch for this loss cause.

TABLE 3-3

COMPARISON OF ACTUAL, AID PREDICTED, AND OPD PREDICTED LOSSES USING A FY72 AID TREE TO PREDICT FY73 LOSSES WARRANT OFFICER RA DISABILITY RETIREMENTS

Branch	Warrant Officers per Branch	AID Loss Probabilities	AID Predicted Losses	OPD Loss Probabilities	OPD Loss Predictions	Actual Losses
AD-1	138	.28	.4	0	0	2
FA-2	30	.01	0	0	0	0
EN-3	60	.50	.3	0	0	0
OD-4	177	.22	.4	1.01	1.8	0
QM-5	137	2.04	2.8	6.00	8.2	2
SC-6	97	.01	0	0	0	3
TC-7	27	2.20	.6	9.09	2.4	1
AG-8	111	1.86	2.1	3.23	3.6	4
MP-9	53	2.80	1.5	2.77	1.5	0
MI-10	67	2.66	1.8	2.77	1.9	0
JA-11	9	3.30	.3	0	0	0
AN-12	0	0	0	0	0	0
MS-13	12	.01	0	0	0	0
AV-14	549	.13	.7	0	0	2
TOTAL	1467		10.9		19.4	14

22.2% AID Prediction Error
38.6% OPD Prediction Error

The two random samples used for FY72 and FY73 were both 100%. See TABLE 3-2 for a complete explanation of the validation test.

TABLE 3-4

COMPARISON OF ACTUAL, AID PREDICTED, AND OPD PREDICTED LOSSES USING A FY72 AID TREE TO PREDICT FY73 LOSSES OFFICER OTRA DISABILITY RETIREMENTS

Branch	Officers per Branch	AID Loss Probabilities	AID Predicted Losses	OPD Loss Probabilities	OPD Loss Prediction	Actual Losses
AR-1	719	1.18	8.5	.65	4.7	7
AD-2	373	.40	1.5	.63	2.3	3
FA-3	1009	1.15	11.6	.55	5.5	8
IN-4	2024	1.02	20.6	1.05	21.2	26
CM-5	72	.63	.5	.99	.7	0
EN-6	586	.45	2.6	.40	2.3	2
OD-7	418	.55	2.3	.88	3.7	2
QM-8	300	.38	1.4	.72	2.2	2
SC-9	805	.48	3.9	.37	3.0	1
TC-10	445	.50	2.3	.67	3.0	5
AG-11	392	.66	2.6	.91	3.6	3
FI-12	75	.54	.4	.61	.5	0
MP-13	245	.35	.9	.35	.9	1
MI-14	664	.37	2.5	.52	3.5	2
WC-15	155	.71	1.1	1.22	1.9	3
CH-16	224	1.30	2.9	1.02	2.3	2
JA-17	222	.33	.7	.27	.6	0
MC-18	879	.42	3.7	.23	2.0	3
DE-19	376	.40	1.5	.53	2.0	0
VC-20	65	.52	.3	.55	.4	0
MS-21	554	.62	3.4	.72	4.0	1
[illegible] 22	0	0	0	0	0	0
AN-23	667	.79	5.3	.55	3.7	9
SP-24	53	.41	.2	.69	.2	0
TOTAL	11322		80.7		74.2	80

FY72 AID "Trees" were used.

.875% AID Prediction Error
7.25% OPD Prediction Error

The two random samples used for FY72 and FY73 were 20%. See TABLE 3-2 for a complete explanation of validation test.

TABLE 3-5

COMPARISON OF ACTUAL, AID PREDICTED, AND OPD PREDICTED LOSSES USING A FY72 AID TREE TO PREDICT FY73 LOSSES OFFICER RA VOLUNTARY RETIREMENTS

Branch	Officers per Branch	AID Loss Probabilities	AID Predicted Losses	OPD Loss Probabilities	OPD Loss Prediction	Actual Losses
AR-1	761	7.50	57.1	6.95	52.9	76
AD-2	495	7.56	37.4	5.96	29.5	44
FA-3	1282	7.62	97.7	7.23	92.3	124
IN-4	2347	7.71	181.0	6.99	164.1	225
CM-5	152	8.42	12.8	8.53	13.0	18
EN-6	614	7.93	48.7	10.01	61.5	74
OD-7	449	8.60	38.6	9.57	43.0	46
QM-8	345	8.48	29.3	7.16	24.7	40
SC-9	512	8.07	41.3	8.89	45.5	50
TC-10	447	8.18	36.6	6.83	30.5	46
AG-11	200	8.25	16.5	7.65	15.3	23
FI-12	104	7.77	8.1	12.29	12.8	19
MP-13	178	8.27	14.7	7.46	13.3	19
MI-14	411	8.34	34.3	10.93	44.9	47
WC-15	59	10.79	6.4	9.72	5.7	17
CH-16	91	9.25	8.4	8.82	8.0	11
JA-17	123	7.76	9.5	9.22	11.3	19
MC-18	192	8.44	16.2	8.76	16.8	20
DE-19	123	8.33	10.2	7.46	9.2	10
VC-20	43	8.52	3.7	6.12	2.6	4
MS-21	369	8.65	31.9	8.59	31.7	33
PR-22	19	6.01	1.1	0	0	1
AN-23	165	11.78	19.4	13.66	22.5	32
SP-24	40	12.98	5.2	18.42	7.4	11
TOTAL	9531		766.1		758.5	1009

24.07% AID Prediction Error
24.82% OPD Prediction Error

The two random samples used for FY72 and FY73 were both 100%. See TABLE 3-2 for a complete explanation of the validation test.

IV. RECOMMENDATIONS

1. The AID-O system has demonstrated the ability to create loss probabilities with greater accuracy, but it is apparent that the loss probabilities created by the system can still be significantly improved by including other variables currently external to the system. Without a doubt, officer loss prediction is more complex than enlisted prediction. As a result, GE-TEMPO recommends that the Army continue the refinements of the AID-O system by including other potential (but less tangible) predictors (such as current job market, career opportunity within the Army, etc.), and by analyzing attitudinal survey data with the demographic information currently in the AID-O system.

2. It has been demonstrated that the AID-O system has the capability to produce accurate annual loss rates. It is also an excellent system which can be effectively employed in other manpower studies to summarize, analyze, and tabulate large volumes of personnel data contained on the OMTR and SOMTR data files. GE-TEMPO recommends that the Army continue to apply the capabilities of this system to other personnel application areas in addition to loss prediction.

3. GE-TEMPO recommends two points with regard to the recent decision to manage the officer force by Officer Personnel Management System (OPMS) codes. First, data elements extracted and edited in the AID-O system should be expanded to include the OPMS codes for each officer. Second, the automated reports (AID-O Validation Reports), which duplicate the current manual procedures, should be modified to produce reports by OPMS as well as branch. These reports were designed for manpower analysts within OPD, and to effectively apply their knowledge and skill to manpower studies, the reports should be modified for management of the officer force by OPMS specialty.

APPENDIX A

List of Data Elements, Definitions, and Abbreviations*

AASSN - Actual Assignment - a numerical code which identifies the major command in which an individual is currently assigned.

ACPR - Accession Process Date - a date (entered from the Cycle Data record - MILPERCEN) identifying the year/month of accession or return from "dropped rolls."

AFCS - Active Federal Commissioned Service - the months of active commissioned service in the Army, Air Force, Navy, Marine Corps and Coast Guard; service in any component of these services is included.

AFS - Active Federal Service - the number of months of active military service, including service as an enlisted man, warrant officer, or commissioned officer in any component of the Army, Air Force, Navy, Marine Corps, and Coast Guard.

AGE - Age (months) - the age of an officer in months of time.

ASTAT - Actual Status - an officer's (or WO's) actual assignment status (i.e., Continental United States operating, Special foreign activities, Foreign students, etc.).

AUSFQ - AUS Non-Selections Fully Qualified - the number of times a fully qualified officer has been rejected for promotion to the grade of CW3, CW4, MAJ, LTC, or COL.

BABR - Basic Branch - the branch of service in which an officer is commissioned or to which he is subsequently transferred or appointed.

CC - Highest Command Position - a numerical code indicating the highest command position held by an individual.

CEL - Civilian Education Level - an education level code which indicates the highest level of school attended or completed.

* Readers requiring more specific information on the data element codes or editing are referred to Volume II, "Programmer/User Manual."

COMP - Component - a basic subdivision of the military service by RA/OTRA and Officer/Warrant Officer.

CPPN - Current Procurement Program Number - an identification of the current source from which an officer (or WO) is commissioned or appointed, or the reason for return to the active Army once separated or dropped from rolls.

CSA - Current Service Agreement - the conditions under which an officer (or WO), voluntarily or involuntarily, is retained on active duty (not applicable to Regular Army officers).

CTLBR - Control Branch - the branch within the Office of Personnel Operations responsible for initiating assignments and other personnel actions for an officer.

DLPC - Date of Last Permanent Change of Station (PCS) - the date of departure on reassignment involving a permanent change of station.

EADC - Date of Entry on Active Duty - the year-month that an officer (or WO) commences travel in compliance with active duty orders.

ELAPC - Eligibility for Additional Pay Code - a numerical code which identifies the type of duties performed under orders that merit an officer (or WO) extra pay.

FSA - Former Service Agreement - the condition under which an officer (or WO) formerly served on active duty, prior to his current service agreement. (Applicable to only OTRA officers, except those officers who were integrated into the Regular Army, and does not apply to general officers).

HASS - Highest Staff Assignment - a numerical code indicating the highest staff position held by an individual.

LASUP - Last Update - the last transaction type and date to successfully update an active OMTR.

MARTL - Marital Status - legal marital status of an officer (or WO).

MEL - Military Education Level - the highest military education institution that an officer has attended.

MONDIFF - Process Date minus OMTR Date - the number of months elapsed since separation date from the date of the OMTR.

MPC - Military Personnel Class - major grade categories of the Armed Forces personnel - commissioned or warrant officers.

MTA - Months to Availability For Next Assignment - the number of months remaining before possible reassignment.

NDEP - Number of Dependents - number of dependent children an officer has.

NOSAU - AUS Non-Selections - the number of times an AUS officer has been rejected for AUS promotion to the grade of colonel (in all basic branches) or to lieutenant colonel in basic branch Army Nurse Corps, Army Medical Specialist Corps, or Women's Army Corps.

NOSRA - RA/USAR Non-Selections - the number of times an RA or Reserve officer has been considered and rejected by RA or USAR Selection Board for promotion to a permanent grade of colonel.

NPMOS - PMOS (Numeric Equivalent) - a numerical equivalent to PMOS for Warrant Officers and a professional equivalence classification for officers.

PASAU - AUS Passovers - the number of times an AUS officer was rejected for promotion to the grade of CW3, CW4, CPT, MAJ, or LTC.

PASRA - RA/ASAR Passover - the number of times an RA or Reserve officer has been considered and rejected by RA or USAR Selection Board for promotion to a permanent grade of CPT, MAJ, LTC, CW3, or CW4.

PGRD - Permanent Grade - a three character field containing a standard grade abbreviation of the permanent grade held by all Regular Army officers (or WOs).

PHYSL - Physical Status - a numerical code which indicates the physical condition of an individual.

PILOT - Pilot Status - the level of flying status attained or the reason for suspension from flying status.

PMOS - Primary MOS - an alphanumeric code which designates an individual's primary military occupational skill.

PPPN - Previous Procurement Program Number - an identification of the previous source from which an officer (or WO) was procured.

PRET - Projected Retirement - the number of months between the projected retirement date and the OMTR date.

PRODT-MON - Processing Date Separated Month - the month in which a transaction separating an officer from active duty was processed by the computerized personnel system maintained by MILPERCEN.

PRODT-YR - Processing Date Separated Year - the year in which a transaction separating an officer from active duty was processed by the computerized personnel system maintained by MILPERCEN.

PTIG - Permanent Grade Time in Grade - the number of months elapsed from the effective year-month of a Regular Army officer's promotion to the OMTR date for the current permanent grade.

RACE - Race - self explanatory.

RAPLN - RA Promotion List Number - a sequential number on a promotion selection list that indicates a Regular Army officer's relative seniority.

SEPDT-MON - Date of Separation, Month - the month in which an officer (or WO) was separated from active duty.

SEPDT-YR - Date of Separation, Year - the year in which an officer (or WO) was separated from active duty.

SERSC - Instructor Duty - a numerical code that indicates the experience of an officer instructor.

SEX - Sex of Service Member - self-explanatory.

SPGRD - Separated Permanent Grade - the standard grade abbreviation for the permanent grade held by an officer (or WO) at the time of separation.

SPN - Separation Program Number - a code identifying the reason an officer (or WO) was separated from active duty, appearing only on separated officer records.

SSN - Social Security Number - a nine digit identification number: the first three digits indicate area or payment center; the middle two digits indicate serial number for bookkeeping; and the last four digits indicate consecutive number within a payment center.

STGRD - Separated Temporary Grade - the standard grade abbreviation for the temporary grade held by an officer (or WO) at the time of separation.

T2ETS-CSA - Expiration of Current Service Agreement - the number of months remaining from the OMTR date to the expiration of the Current Service Agreement (not applicable to RA officers).

T2ETS-FSA - Expiration of Former Service Agreement - the number of months remaining from the OMTR date to the date of expiration of the Former Service Agreement (not applicable to RA officers or to general officers).

TD - Troop Duty - the number of months of troop duty served.

TGRD - Temporary Grade - a three-character field containing a standard grade abbreviation of the temporary grade held by an officer (or WO).

TRAN - Transaction Loss Type - a numerical code which identifies the cause for a loss.

TTIG - Temporary Grade Time in Grade - the number of months elapsed from the effective year-month of an AUS officer grade promotion to the OMTR date for the current temporary (AUS) grade.

APPENDIX B

ERROR COUNTS FOR A10-0 EDIT

DATA ELEMENT	ERROR COUNTS VALID	INVALID	RECONSTRUCTED
01	141470	1	0
04	37139	84432	0
03	120761	644	63
04	120724	592	54
05	120349	1121	0
06	141470	0	0
07	121347	83	0
08	121373	97	0
09	141466	14	4
10	141465	25	0
11	121477	707	0
12	125491	0	15979
13	119549	1921	0
14	117645	0	3790
15	117724	3769	0
16	121962	8	0
17	141470	0	0
18	117775	3695	0
19	141470	0	0
20	140430	1340	0
21	141474	69	0
22	118736	4734	0
23	141471	0	0
24	115967	5513	0
25	119126	7345	0
26	120769	0	701
27	121469	0	641
28	121851	611	20358
29	141470	0	0
30	32470	88700	0
31	118741	2969	0
32	115967	11473	0
33	115714	6066	0
34	119727	1743	0
35	140966	504	0
36	141470	0	0
37	141471	0	0
38	141470	0	0
39	141470	0	0
40	141468	2	0
41	141470	0	0
42	141470	0	0
43	141470	0	0
44	141470	0	0
45	141470	0	0
46	121442	28	0
47	119620	8850	0
48	96721	0	0
49	141470	1	0
50	88761	1	0

APPENDIX B

ERROR COUNTS FOR AID-O EDIT

53	[illegible]	16921	0	0
54	[illegible]	16921	0	0
55	[illegible]	16921	0	0
56	UT-51-STGRD	16921	0	0
57	UT-52-SPGRD	16895	72	0
58	UT-53-SMAFCS	16921	3	0
59	UT-54-SMAPS	16921	0	0
5A	UT-55-CTLRM	647997	331200	0
5B	UT-56-PRLIFF	16648	73	0

UNCLASSIFIED

APPENDIX C

UNCLASSIFIED 30 JULY 1974

AIDD SUMMARY EDIT REPORT
FY73

OMTA RECORD COUNT (30 Jun 72) 104565

SOUTH RECORD COUNT (1 Jul 72 - 30 Jun 73) 16921

	••••••••OTR••••••		••••••••R•••••••	
	OFFICER	WARRANT OFFICER	OFFICER	WARRANT OFFICER
VOLUNTARY RETIREMENTS			1048	54
MANDATORY RETIREMENTS			463	15
UNSPECIFIED RESIGNATIONS			909	6
NON-DISABILITY RETIREMENTS	1003	1114		
OTHER CORRECTION	5650	147		
RETIRED	2408	260		
DISABILITY RETIREMENTS	361	188	439	14
MISCELLANEOUS	2363	297	228	4
TOTAL LOSSES	11795	1996	3087	93
TOTAL LOSSES + NON-LOSSES	57533	14473	47997	1467

UNCLASSIFIED

NUMBER OF RECORDS WRITTEN = 121470

APPENDIX D

LIST OF AID-O VALIDATION REPORTS

TITLES	REPORT NUMBERS
RA VOLUNTARY RETIREMENTS BY BRANCH AND YEARS OF ACTIVE FEDERAL SERVICE	RA-1
RA MANDATORY RETIREMENTS	RA-2
RA DISABILITY - RETIREMENTS	RA-3
RA UNQUALIFIED RESIGNATIONS RATES	RA-4
RA MISCELLANEOUS LOSSES	RA-5
WARRANT OFFICERS, RA MANDATORY RETIREMENTS	RA-6
RA MISCELLANEOUS LOSSES - WARRANT OFFICERS	RA-7
WARRANT OFFICER RA VOLUNTARY RETIREMENTS BY BRANCH, PRIMARY MOS AND YEARS OF ACTIVE FEDERAL SERVICE	RA-8
WARRANT OFFICER RA DISABILITY RETIREMENT	RA-9
OTRA NON-DISABILITY RETIREMENT	OTRA-1
OTRA DISABILITY RETIREMENT	OTRA-2
OTRA OBV-2 RETENTION	OTRA-3
OTRA REFRAD BY BRANCH AND YEARS OF ACTIVE FEDERAL COMMISSIONED SERVICE	OTRA-4
OTRA MISCELLANEOUS LOSSES	OTRA-5
WARRANT OFFICER OTRA NON-DISABILITY RETIREMENTS FOR CW2, CW3, & CW4	OTRA-6
OTRA OBV WO AVIATOR RETENTION	OTRA-7
WARRANT OFFICER OTRA DISABILITY RETIREMENT	OTRA-8
OTRA MISCELLANEOUS LOSSES - WARRANT OFFICERS	OTRA-9
WARRANT OFFICER OTRA NON-DISABILITY RETIREMENTS BY BRANCH, PRIMARY MOS, AND YEARS OF ACTIVE FEDERAL SERVICE	OTRA-10
OTRA OBV WO RETENTION (NON-AVIATORS)	OTRA-11

APPENDIX E

CODE DEFINITIONS FOR AID TREES IN SECTION III

Definitions of the codes for the variables used in the AID-O system are given in Appendix A. The meanings of the AID edited codes used in the AID trees presented in Section III are presented below:

1. Control Branch (CTLBR) for both officers and warrant officers is the same as Basic Branch (BABR). The edited and AID-recode values and their meanings are the same: the branch within the Office of Personnel Operations responsible for initiating assignments and other personnel actions for an officer.

Code	Meaning	Edited Values	
		Officer	WO
AD	Air Defense Artillery	02	01
AG	Adjutant General's Corps	11	08
AN	Army Nurse Corps	23	12
AR	Armor	01	00
AS	Army Security (old)	14	10
AT	Artillery (old)	03	02
AV	Aviation	00	14
CH	Chaplains	16	00
CM	Chemical Corps	05	00
DE	Dental Corps	19	00
EN	Corps of Engineers	06	03
FA	Field Artillery	03	02
FI	Finance Corps	12	00
GO	General Officers	25	00
IN	Infantry	04	00
JA	Judge Advocate General's Office	17	11
MC	Medical Corps	18	00
MI	Military Intelligence	14	10
MP	Military Police Corps	13	09
MS	Medical Service Corps	21	13
OD	Ordnance Corps	07	04
PR	Professors, USMA	22	00
QM	Quartermaster Corps	08	05
SC	Signal Corps	09	06
SP	Army Medical Specialist Corps	24	00
TC	Transportation Corps	10	07
VC	Veterinary Corps	20	00
WC	Women's Army Corps	15	00

2. Primary MOS's (PMOS's) for Commissioned Officers are grouped by professional skill category and each category is assigned to a numerical value. In short, "Professional Skill Code" is the AID-recode value:

Professional Skill Code	Professional Skill Category	PMOS
12	Engineering	0615, 2040, 2167, 2170, 4319, 7004, 7010, 7020, 7110, 7130, 7140, 7221, 7240, 7300, 7360, 7421, 7500, 7501, 7502, 7601, 7611, 7750, 7860, 7881, 7900, 7902, 7922, 7930, 7932, 7960, 8700, 9610.
13	Math/Physical Sciences	3304, 3310, 3315, 6400, 7312, 7317, 7318, 7319, 7330, 7915, 7940, 8000, 8204, 8311.
07	Medicine/Life Sciences	2239, 3000 - 3308, 3311, 3314, 3316 - 3506, 3620, 5525, 8430.
14	Law/Jurisprudence	8101, 8102, 8103, 8104, 8105, 8127, 8128, 8130.
15	Social Sciences	2180, 2421, 6410, 8400, 9303, 2420.
06	Education	2500, 2517, 2520, 2548, 2622, 2701, 2715, 2728, 5503.
10	Humanities	5310, 5400, 5505, 5522, 8500, 8510, 8511, 8521, 8605, 9330, 9332, 9335, 9604.
05	Administrative/ Managerial	0002, 2010, 2011, 2015, 2019, 2025, 2030, 2110, 2120, 2136, 2145, 2200, 2210, 2260, 2265, 2310, 2330, 2334, 2431, 2610, 2615, 2900, 4210, 4223, 4300, 7320, 9310, 4011.

Professional Skill Code	Professional Skill Category	PMOS
09	Mechanical/ Electrical Repair	0600, 0663, 0735, 0823, 4803, 4804, 4808, 4815, 4818, 4823, 4825, 4850, 4851, 4852, 4854, 4855, 4856, 4857, 4860, 4861, 4862, 4892, 7211, 4514.
08	Supply	2624, 2625, 2910, 4010, 4130, 4200, 4201, 4320, 4403, 4420, 4445, 4475, 4490, 4510, 4820.
03	Transportation	0609, 0612, 0660, 0668, 0692, 0693, 0694, 0706, 0715, 0716, 0717, 0718, 0720, 0730, 0736, 0737, 0740, 0750, 0753, 0754, 0801, 0804, 0815, 0820, 0825, 2640.
18	Miscellaneous Professional	1980, 1981, 1982, 1987, 2401, 2402, 2518, 3606, 4312, 5900, 7242, 7423, 7424.
16	Protective Services	2720, 7422, 9000, 9100, 9110, 9121, 9414, 9224.
11	Finance/ Accounting	2800, 2801, 6010, 6100, 6101, 6200, 6201, 6302.
19	Food, Lodging, Entertainment	4112, 4114, 4120, 5000, 5241.
17	Production, Dist. of Utilities	4600, 4601, 4940, 4944, 4960.
20	(Non-professional) Misc. Service	0030, 2430, 4371, 4830, 4942, 4360, 1328, 1331, 1342, 1367.

Professional Skill Code	Professional Skill Category	PMOS
01	(Unclassifiable) Miscellaneous	0001, 0003, 0005, 0006, 0009.
02	Communications	0205, 0213, 0220, 0300, 0405, 0425, 0505, 7899, 9620, 9630, 1010, 0221.
04	Military/ Combat	1111, 1115, 1154, 1174, 1176, 1177, 1178, 1180, 1181, 1183, 1190, 1193, 1198, 1203, 1204, 1210, 1330, 1415, 1542, 1543, 1560, 1690, 1691, 2162, 2163, 2510, 4515, 4516, 4517, 7314, 7315, 9300, 9301, 9305, 9307, 9309, 9511, 9601, 9640, 9666, 9668, 0590.
00	Unknown or invalid	

3. **Assignment (known as Command, Current Assignment) (CAC) is both for officers and warrant officers.**

Code	Meaning	Edited Value
4A	Fourth US Army	
1A	First US Army	01
3A	Third US Army	02
5A	Fifth US Army	03
6A	Sixth US Army	04
AD	US Army Air Defense Command, including Command and Regional Hdqtrs.	16
CA	Hdqtrs., US Continental Army Command	01
CB	US Army Criminal Investigation Command (USACIDC)	13
CC	US Army Strategic Communications Command	13
CD	US Army Combat Developments Command	13
IC	US Army Intelligence Command	13
MT	Military Traffic Management and Terminal Service	13
MW	Military District of Washington	14
M1	Hdqtrs., US Army Material Command	12
M2	US Army Electronics Command	12
M3	US Army Missile Command	12
M4	US Army Tank Automotive Command	12
M5	US Army Munitions Command	12
M6	US Army Aviation Material Command	12
M7	US Army Test and Evaluation Command	12
M8	US Army Weapons Command	12
M9	US Army Mobility Equipment Command	12
SA	Office, Secretary of the Army	14
CS	Office, Chief of Staff, US Army	14
AG	The Adjutant General	14
AU	Army Audit Agency	14
CE	Chief of Engineers	14
MD	The Surgeon General	13
SF	Other Field Activities of Army Staff (Field activities assigned to DCSPER, ACSI, ACSC-E, OCA, DCSOPS, CRD, DCSLOG, ACSFOR, CORC, COPO, Chief of Chaplains, The Provost Marshal General, Chief of Information, TJAG, and Chief of Support Services.)	14

Code	Meaning	Edited Value
AS	US Army Security Agency	15
SD	Dept. of Defense and US Army Elements of Joint Activities	14
AL	US Army Alaska	05
C1	US Army Forces Southern Command	06
E1	Hdqtrs., US Army Europe	07
E2	US Army Theater Army Support Command, Europe	07
E3	SETAF	07
E4	Berlin Command	07
E7	Seventh US Army	07
P1	Hdqtrs., US Army Pacific	08
P2	US Army, Hawaii	08
P3	US Army, Japan	09
P5	US Army, Japan	10
P6	Hdqtrs., US Army Control, Thailand	10
P7	US Army, Taiwan	11
P8	Eighth US Army (Korea)	09
JA	Joint Activities	14
DF	Defense Agencies	14
HS	US Army Health Services Command	13
CM	US Army Computer Systems Command	13
RC	US Army Recruiting Command	13
SC	Safeguard Systems Command	13
MA	US Military Academy	17
GB	National Guard Bureau	14
FC	US Army Forces Command	13
TC	US Army Training and Doctrine Command	13
C2		06
SV		14

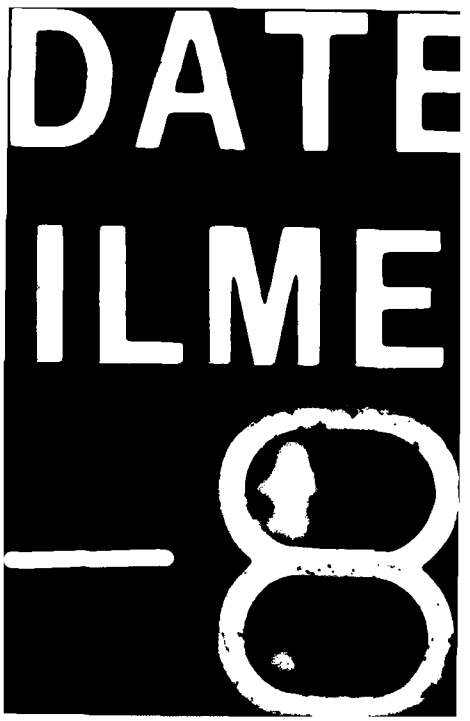
4, **Military Educational Schooling Level (MEL) identifies the highest military educational institution attended.**

Code		Meaning	Edited Value
Attended	Constructive or Equivalent		
0-2	-	-	0-2
3	L	National War College; Industrial College of the Armed Forces; Army, Air, and Navy Warfare College.	3
4	-	-	9
5	N	Army, Navy, Air and Marine Corps Command and General Staff Colleges; Armed Forces Staff College.	5
6	O	Advanced Branch School	6
7	P	Basic Branch School	7
8	Q	Specialist Courses	8
9	-	Negative	9
-	X	Deletion	9

5. Current Procurement Program Number (CPPN) identifies the current source from which an officer (or warrant officer) is commissioned or appointed, or the reason for return to the active Army once separated or dropped from rolls. AR601-110 and AR680-100 give the definitions of the codes used. See also Procurement Program Number-Table in section 3.1.2.8 of Volume II, where input value (original code) and output value are shown. A record is checked against the table referenced. If it is invalid, the edited value is "zero."

6. Troop Duty (TD) is a code identifying the number of months of troop duty served by an individual.

Code	Meaning
1	48 months or more
2	42-47 months
3	36-41 months
4	30-35 months
5	24-29 months
6	18-23 months
7	12-17 months
8	less than 12 months


DATE
ILME
8